MISCELLANEOUS.

Note on the Hop-fly. By Francis Walker, Esq.

The alternate generation of Aphides, or the succession of winged to wingless broods, is an interesting part of their history, and the more so, for its consequence in many species is the migration and change of food of the winged insects. Thus the Hop-fly (*Aphis Humuli*) is hatched on the sloe, and the second generation passes thence to the hop, which is much exhausted by the third and fourth broods, but these decrease in number or disappear after awhile, and then the Aphis returns to the sloe.

On the Parasitical Nature of the Rhinanthaceæ. By J. Decaisne.

Since DeCandolle established by ingenious observations and accredited by the authority of his name the separation of parasitic plants into two groups, physiologists have generally admitted it as a well-established law. It is known in fact that the phanerogamous plants which are parasitic upon the stems of other vegetables have green leaves, while those upon roots do not possess true leaves, contain no green colouring matter, but are generally of a whitish, yellowish or violet colour: in other words, they appear blanched or sickly when compared to other plants; their leaves, or the scales with which their stems are provided, are generally without epidermic pores. The absolute character of the law advanced by DeCandolle has however been recently modified by the observation of Mr. W. Mitten of a plant (*Thesium Linophyllum*) parasitic upon roots and nevertheless provided with green leaves.

The observation of Mr. Mitten immediately called to mind a fact I had long noticed, that is, the impossibility of cultivating plants belonging to the group of the true *Rhinanthaceæ*. Wishing to introduce into cultivation the purple cow-wheat (*Melampyrum arvense*), I frequently sowed the seed, which however all perished a few days after their germination without my being able to account for this want of success. The same applies to species of *Pedicularis* and *Euphrasia*: removed with care from the field and transferred with every possible caution into our gardens these plants soon dry up, in a few hours they become black and so brittle that they appear to have been scorched. Bearing in mind these facts, the question suggested itself, whether the uncultivable *Rhinanthaceæ* might not be parasitic plants; in fact, their rapid death in our gardens and their injurious effects upon the neighbouring plants, a fact well known to cultivators, led me to suspect their parasitic nature. The observation which I have the honour to bring before the Academy settles this question. The species of *Alectorolophus*, *Melampyrum* and *Odontites* are true parasitic plants which fix themselves to the roots of grasses, shrubs or even trees by numerous suckers. These suckers are arranged on the branched and delicate rootlets of *Melampyrum* in the same manner as on the filaments of *Cuscuta*; the parasitic rootlets are in close contact with the young roots of the plants upon which they feed; the point of contact is indicated by a swelling.

I regret that I have not yet been able to verify the parasitic nature upon other species than those which occur in our fields. I propose however to examine whether what I have observed in the plants of this neighbourhood will occur or not in analogous plants, or whether this phænomenon is so modified in them as to afford an explanation of the anomalies of structure I am about to point out.

In a memoir* presented to the Academy, M. Duchartre described in a parasitic plant, *Lathræa clandestina*, a peculiar ligneous structure, the most prominent character of which is the absence of medullary rays: on the other hand, M. Elie Brogniart in noticing this fact in his report on this paper wished to ascertain whether it did not occur in other plants belonging to the same class as the Clandestine, and he found it in *Melampyrum*: nevertheless in pointing out the anomalous structure in these vegetables, MM. Brogniart and Duchartre did not connect it with the fact of parasitism, but merely saw in it a relation of family. However, this peculiar organization appears to me intimately connected with the parasitic nature of the plants, judging from the uniformity of structure and the black colour of the stems of *Pedicularis*, *Castillegia*, *Cymbaria*, *Bartsia*, *Buchnera*, which are all destitute, according to my observations, of medullary rays.

If parasitic plants assume a black tint mixed with blue on drying —if the absence of medullary rays is one of their attributes—and if these characters are connected with a special absorption of the nutritive juices, I may observe that these occur without exception in a group of plants which no one has hitherto suspected of being parasites, I mean the Sundews, which are likewise uncultivable. But with regard to the species of *Drosera* there is another anomaly far more singular to be investigated, that of a dicotyledonous plant being parasitical upon a moss, if, as I suspect, the *Sphagnum* is necessary to the nutrition of the *Drosera*. There still remains to ascertain the relation of causality between these characters of structure and parasitism.

With respect to the peculiar coloration of the blackening juices which these parasitical vegetables contain, that is a question which belongs to chemistry. In conclusion, the foregoing observations upon *Melampyrum*, *Odontites* and *Alectorolophus* explain clearly why it is impossible to cultivate these plants, which do not meet in the artificial soil of our gardens with the roots of those vegetables at whose expense they live; it also throws some light in my opinion upon the fact observed by agriculturists, that the *Rhinanthaceæ* exert an injurious effect upon the grasses and Cerealia.—*Comptes Rendus*, July 12) 1847.

On the situation of the Olfactory Sense in the terrestrial tribe of the Gasteropodous Mollusca. By Joseph Leidy, M.D.

While no observer of the habits of the terrestrial Gasteropoda doubts the existence of the sense of smell in them, but, on the con-

* A translation of this memoir appeared in the 'Annals' for June 1845.